

REMARKS

Claims 1-12 and 21-32 are pending examination in the application. Claims 13-20 and 33-34 have been withdrawn.

Claim Rejection 35 U.S.C. § 102

35 U.S.C. § 102(b)

Claims 1 and 8-12 stand rejected under 35 U.S.C. §102(b) as being anticipated by Yanai et al. (United States Patent Number 5,742,792), hereinafter Yanai. Applicant respectfully traverses.

Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *W.L. Gore & Assocs. v. Garlock*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Further, "anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)). Emphasis added.

The present invention is generally directed to a system and method for managing the coherency of mirrored storage volumes and restoring the coherency of storage volumes should a communication disruption occur. As generally recited in Claim 1, a system includes a primary storage controller capable of cyclic redundancy checking (CRC) stored data such as on a linked primary storage volume. The Yanai reference fails to disclose each and every limitation and therefore fails to anticipate the present invention. Yanai does not disclose CRC checking data stored on a primary storage volume. Rather, the cited portion of Yanai (Col. 40, lines 17-31) discloses conducting a CRC operation on transmitted data (i.e., communicated data). Nowhere in the Yanai reference is a system including a storage controller capable of cyclic redundancy checking stored data disclosed or suggested. As such, Yanai does not disclose each and every limitation and fails to anticipate the present

invention. Removal of the pending rejection under 35 U.S.C. §102(b) is respectfully requested and allowance is earnestly solicited.

With respect to Claims 10-12, Applicant respectfully traverses the rejection. The cited portion of the Yani reference discloses (1) "marking" all updated tracks or (2) accumulating data for the second volume in invalid tracks in the cache of the primary storage volume. Yani Col. 29, lines 41-44 and 45-52, respectively. In the first situation, Yani fails to teach how marking is accomplished and therefore fails to teach maintaining a coarse grain bitmap as recited in the relevant claims. "An anticipating reference must describe the patented subject matter *with sufficient clarity and detail* to establish that the subject matter existed and that its existence *was recognized by persons of ordinary skill in the field of invention.*" *ATD Corp.v. Lydall, Inc.*, 48 USPQ.2d 1321,1328 (Fed. Cir. 1998) citing *In re Spada*, 15 USPQ.2d 1655, 1657 (Fed. Cir. 1990). Emphasis added. In the second situation (in the Yani reference), all data is stored, rather than storing a coarse grain bitmap as recited in the claims. Applicant will not burden the record further. Removal of the pending rejection under 35 U.S.C. §102(b) to Claims 10-12 is respectfully requested.

Claim Rejection 35 U.S.C. § 103

35 U.S.C. § 103(a)

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to: (A) the claimed invention must be considered as a whole; (B) the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (C) the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and (D) reasonable expectation of success is the standard with which obviousness is determined. *See MPEP § 2141 and Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 220 USPQ 182, 187 n.5 (Fed. Cir. 1986).

Claims 2-5 stand rejected under 35 U.S.C. §103(a) over Yani in view of Bauer et al., United States Patent Number 5,870,759 (hereinafter Bauer). The rejection is respectfully traversed.

The Office is correct that the Yani reference does not teach utilizing a primary or secondary controller to initiate a CRC of the data on a storage volume. The Office is incorrect that Bauer corrects this deficiency. Bauer on the whole discloses a server/client relationship in-which the client, upon reestablishment of communication, compares all the current data with all the preexisting data (before-image of client data) to detect if modification has occurred. The asserted combination of Yani/Bauer fails to make obvious the claims presently at issue. Claim 2 recites a system in which the primary storage controller initiates a CRC of the primary storage volume upon reestablishment of communication. Yani/Bauer fails to disclose a system having this capability. Claim 3 further recites a system in-which the primary controller is capable of comparing the results of a CRC on the primary storage volume with a CRC scan conducted on the secondary storage volume. Bauer fails to teach or suggest a system as recited in the claims because Bauer teaches/suggests a system in which all data (all client data) must be communicated to the client in order to detect modifications before the modifications are propagated to the server. Bauer, Col. 2, lines 9-24. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Ryoka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974). The asserted combination fails to disclose the present invention as recited in the claims, thus a *prima facie* case of obviousness under 35 U.S.C. §103(a) does not exist. In-light of the foregoing, removal of the pending rejection under 35 U.S.C. §103(a) to Claims 2-5 is respectfully requested and allowance solicited.

Claims 6 and 7 are believed to be allowable based on the same rational as discussed with respect to Claim 1. As Yani fails to disclose CRC scanning stored data the asserted combination of Yani in-view of "Official Notice" is inapplicable as there has been no

showing correcting this flaw in Yani. Applicant will not burden the record further. In light of the foregoing, removal of the pending rejection under 35 U.S.C. §103(a) is respectfully requested and allowance solicited.

Claims 21 and 28-32 are pending a rejected under 35 U.S.C. §103(a) over Yani in view of Howard et al., United States Patent Number 6,629,198 (hereinafter Howard). The rejection is respectfully traversed.

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *M.P.E.P. §2141.02 citing Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed Cir. 1983). Emphasis original.

Yani fails to disclose conducting at least one of a MD-5 and a SHA-1 scan of stored data as recited in Claim 21. The Howard reference fails to correct this defect. Howard on the whole discloses a system in which a "write-ahead" hash log is maintained within non-volatile storage. Howard, Col. 4, lines 42-43. Thus, the asserted combination of Yani/Howard, on the whole would suggest the utilization of a write-ahead hash log for use in communication rather than the present invention as recited in the applicable claims. In light of the foregoing, removal of the pending rejection under 35 U.S.C. §103(a) to Claims 21 and 28-32 is respectfully requested and allowance solicited.

Regarding Claims 30-32, Applicant respectfully traverses the rejection. The cited portion of the Yani reference discloses (1) "marking" all updated tracks or (2) accumulating data for the second volume in invalid tracks in the cache of the primary storage volume. Yani Col. 29, lines 41-44 and 45-52, respectively. Yani fails to teach how "marking" is accomplished thereby failing to teach maintaining a coarse grain bitmap as recited in the claims. In the second example, all data is stored, rather than storing a coarse grain bitmap

as recited in the claims. Applicant will not burden the record further. Removal of the pending rejection under 35 U.S.C. §103(a) is respectfully requested and allowance is earnestly solicited.

Claims 22-25 are pending a rejection under 35 U.S.C. §103(a) over Yani in-view of Howard, further in-view of Bauer. The rejection is respectfully traversed.

The Office is correct that Yani fails to disclose a system in which a primary storage controller initiates at least one of a MD-5 and a SHA-1 scan of the primary storage volume upon reestablishment after an interruption in the communication channel. The Office is incorrect that Howard/Bauer correct this deficiency in the Yani reference. As discussed previously, Bauer on the whole discloses a server/client relationship in-which the client, upon reestablishment of communication, compares all the current data with all the preexisting data (before-image of client data) to detect if modification has occurred. Bauer fails to teach or suggest a system as recited in the claims because Bauer teaches/suggests a system in which all data (all client data) must be communicated to the client in order to detect modifications before the modifications are propagated to the server. Bauer, Col. 2, lines 9-24. Applicant respectfully notes the Howard reference, while mentioned in the introductory paragraph is not cited in the text of the rejection, thus it is believed that the pending rejection is based solely on the Yani/Bauer combination. In-light of the foregoing, reconsideration is respectfully requested and allowance is earnestly solicited.

Claims 26 and 27 are pending a rejection under 35 U.S.C. §103(a) over Yani in-view of Howard, further in-view of Official Notice. The rejection is respectfully traversed. Claims 26 and 27 are believed to be allowable based on their dependence from Claim 21 which is believed to be allowable. Applicant will not burden the record further. In-light of the foregoing, reconsideration is respectfully requested and allowance is earnestly solicited.

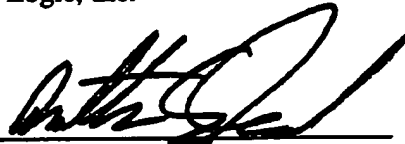
CONCLUSION

In light of the forgoing, reconsideration and allowance of the claims is earnestly solicited.

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Respectfully submitted,
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